

**PATENT**  
**IBM**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of	:	Carro, et al.
Serial Number	:	To Be Assigned
Filing Date	:	March 8, 2001
Examiner	:	To Be Assigned
Group Art Unit	:	To Be Assigned
For	:	METHOD AND SYSTEM OF MARKING A TEXT DOCUMENT WITH A PATTERN OF EXTRA BLANKS FOR AUTHENTICATION

TO: The Honorable Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

With respect to the Patent Application filed concurrently herewith, please substitute claims  
1 - 10 set forth hereinafter for claims 1 - 10 as contained in said application.

Insert the followings claims:

-- What is claimed is :

1. A method of marking an original text document,  
said original text document comprising words separated by inter-word intervals,  
said inter-word intervals including one or more blank characters having  
numbers, said numbers being altered,  
said method of altering said numbers of said blank characters, comprising the  
steps of:  
applying a reversible transform over said original text document in order that all  
said inter-word intervals become exclusively comprised of odd numbers of said blank  
characters;  
splitting and transforming said original text document into a first subset and a  
second subset of said words including trailing blanks of said inter-word intervals  
of said words;  
and, over said first subset:  
computing from said original text document and a secret-key, an authentication  
pattern that fits the number of said intervals of said first subset;  
adding inter-word blank characters in positions corresponding to said  
authentication pattern;  
generating a canonical form of said first subset;  
computing, from said canonical form of said first subset and said secret-key, a  
blurring pattern that fits the number of said intervals of said first subset;  
modifying the numbers of inter-word blank characters according to said blurring pattern;  
and, over said second subset:  
generating canonical form of said second subset;  
computing, from said canonical form of said second subset and said secret-key, a  
blurring pattern that fits the number of said intervals of said second subset;  
modifying the numbers of inter-word blank characters according to said blurring pattern;  
recombining said first subset and said second subset  
thereby, obtaining a marked text for authentication.

2. A method of authenticating a marked text document, said marked text document comprising words separated by inter-word intervals, said inter-word intervals including one or more blank characters having numbers which are checked, said method comprising checking the numbers of said blank characters utilizing the steps of:

splitting said marked text document into a first subset and a second subset of said words including trailing blanks of said inter-word intervals of said words;  
and, over said first subset:  
generating a canonical form of said first subset;  
computing from said canonical form of said first subset and a secret-key a blurring pattern that fits the number of said intervals of said first subset;  
erasing modifications brought to the numbers of said inter-word blank characters per said blurring pattern;  
extracting an authentication pattern thereby, obtaining in all said inter-word intervals, odd numbers of blank characters;  
and, over said second subset:  
generating canonical form of said second subset;  
computing from said canonical form of said second subset and said secret-key a blurring pattern that fits the number of said intervals of said second subset;  
erasing modifications brought to the numbers of said inter-word blank characters per said blurring pattern thereby, obtaining in all said inter-word intervals, odd numbers of blank characters ;  
recombining said first subset and said second subset;  
applying a reverse transform thus retrieving said original text document;  
computing from retrieved, said original text document  
and said secret-key an authentication pattern that fits the number of said intervals of retrieved said original text document ;  
comparing extracted said authentication pattern

and computed said authentication pattern;  
if matching exactly, accepting said marked text document as authentic;  
if not:  
rejecting said marked text document as fake.

3. The method defined in claim 2 wherein splitting steps includes the preliminary steps of.  
generating a canonical form of a text document; computing, from said canonical form of said  
text document and said secret-key, a splitting pattern that fits the number of said intervals  
of said text document; thereby, allowing to split and to recombine said text document  
on the basis of asserted and non-asserted bits of said splitting pattern.

4. The method defined in claim 3 wherein said authentication pattern, said blurring  
pattern and said splitting pattern are binary vectors comprising a number of bits matching  
the number of said inter-word intervals.

5. The method defined in claim 4 wherein said canonical form is obtained in stripping all  
blank characters, in excess of one, off said inter-word intervals.

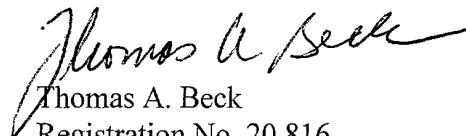
6. The method defined in claim 5 wherein modifying steps include:  
in the positions corresponding to the asserted bits of said blurring patterns:  
adding one blank character if said inter-word intervals comprise of an odd number of said  
blank characters; and  
removing one blank character if said inter-word intervals comprise an even number of  
said blank characters.

7. The method defined in claim 6 wherein modifying steps and erasing steps are performed identically.

8. The method defined in claim 7 wherein extracting step includes removing one blank character in those of said inter-word intervals that are comprised of an even number of said blank characters;

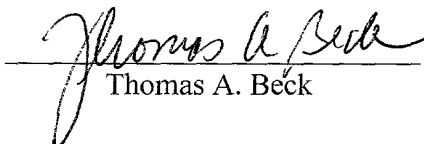
obtaining a binary authentication vector with asserted bits corresponding to positions where said blank characters were removed.

Respectfully Submitted,



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I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231 *Express*

  
Thomas A. Beck

Dated: March 12, 2001